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TWO NEW GENERA AND SPECIES OF APHIIDAE
(HOMOPTERA).¹

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The genus *Chaitophorus* was originally described by Koch (8), in 1854, and characterized mainly by the short, thick and truncate cornicles, hairiness of the body, legs and antennae as well as of the wart-like cauda. He listed twelve species as belonging to this newly erected genus, without designating any of them as the type of the genus. The type of *Chaitophorus* was fixed by Gerstaecker (6), in 1856, using *Aphis populi* Linnaeus for the purpose.

Since that time several new species were described and placed in the genus *Chaitophorus*, while some of the species, originally listed by Koch, have been removed from it and are placed in different genera of the tribe *Callipterini*. Among the American species usually considered under *Chaitophorus* we also find a species known as *Chaitophorus quercicola* Monell. Describing both apterous and alate forms of his species in 1879, Monell (9, p. 32), placed it in this genus with considerable doubt, for he states: "Though the antennae of this species are not sufficiently pilose to justify its being placed in *Chaitophorus*, its general appearance seems to point to this as its rightful position."

In 1880, Thomas (14) described a species *quercifolii*, placing it in the genus *Callipterus* of early workers' conception of the genus. Thomas's species is doubtless that of *quercicola* Monell, as has been shown by Davis (3 and 4), who examined and tabulated Thomas's collection in 1913 and gave an annotated list of Illinois aphid material in 1910. The original Thomas' slide of the species is in the custody of the Illinois Natural History Survey Laboratory. Through courtesy of Dr. Theo. Frison the writer had the opportunity of examining the cotypic slide of *quercifolii* Thomas. Both alate and apterous viviparous females mounted on this slide, agree in all respect with the original description of *quercicola* Monell.

In 1886, Oestlund (10) described his *Chaitophorus spinosus*

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from the apterous oviparous female, and in 1887 he (11) gave a description of apterous viviparous form. Davis (3), in 1910, and Baker (1), in 1917, considered *spinus* Oestlund as a synonym of *quercicola* Monell. In his later publication, 1922, Oestlund (12) accepted this synonymy of his species. Just recently Dr. Oestlund was very kind to show to the writer theotypic material from which a description of *spinus* was made. This material agrees with the description of *quercicola* Monell, and leaves no doubt as to the identity of this species.

Hottes and Frison (7) in their remarkable volume on "The Plant Lice, or Aphidae of Illinois" have rightly placed both *quercifolii* Thomas and *spinus* Oestlund as synonyms of *quercicola*. They also consider *Callipterus? quercicola* Monell, which was described by Monell from two alate specimens mounted on a slide, sent to him from St. Louis, Missouri, to be synonymous with *Chaitophorus quercicola* Monell. The original description of Monell's former species (9, p. 31) is at some variance with the description of alate form of the latter species (9, p. 32). What species Monell described under *Callipterus? quercicola* is difficult to tell, but it is certain, however, that it is different from his *Chaitophorus quercicola*. The relative length of antennal segments, the nature and the length of unguis, reduced cornicles to mere pores, as well as other characters, together with the host on which it was taken, suggest strongly that he was probably dealing with *Stegophylla* sp. In spite of these discrepancies, his former species may be provisionally considered synonymous with the species now well recognized by many aphidologists as *Chaitophorus quercicola*, until further light as to its identity may be thrown on Monell's *Callipterus? quercicola*.

At the time Monell described his *quercicola*, the number of generic characters were limited. The types of caudae and anal plates were hardly discernible with the equipment used by the workers of former years, and naturally, were not considered then as most stable and useful generic categories, as they are employed to-day together with other morphological and biological characters in aphid taxonomy. Baker (2), Theobald (13) and others redefined aphid genera and characterized *Chaitophorus* by the distinctly knobbed cauda; entire, rounded or flat anal plate, rarely somewhat indefinitely indented; rather prominent hairy covering of the body, legs and antennae; short truncate cornicles with reticulations and imbrications; the absence of frontal tubercles; and the unguis twice or more times the length of the base of the sixth antennal segment.

After a careful examination of a long series of available specimens of *Chaitophorus quercicola* Monell, it becomes apparent that this species radically departs in a number of generic characters from the genus *Chaitophorus*, especially in the type

of cornicles, anal plate, cauda, spiny armature and relative length of the unguis. The cornicles of *quercicola* are neither imbricated nor reticulated, but are entirely smooth with a rather prominent constriction in the middle, while the imbrication and reticulation of the cornicles are strikingly typical characters of all of the species properly belonging to *Chaitophorus* (compare figs. 8 and 11). The anal plate is deeply bilobed and the lobes are somewhat separated in both alate and apterous forms of *quercicola* (figs. 6 and 7), resembling in this respect *Myzocollis* species, while the genus *Chaitophorus* is characterized by the entire, rounded or flat anal plate, only rarely, usually due to shrinkage, it may look somewhat indented (figs. 9 and 10). The cauda is large and is broadly knobbed, with a short, thick neck, somewhat departing from a typical *Chaitophorus* cauda, which is also knobbed, but is small and is set, as a rule, on a narrow, thin neck. The relative length of the unguis is a more specific character than generic, yet each genus in the tribes *Callipterini* and *Chaitophorini* can readily be defined, in addition to other characters, also by the type rather than the length of the unguis. The unguis of *quercicola* is short and thick, about the length of the base of the sixth antennal segment (fig. 1), while the typical *Chaitophorus* species have strikingly characteristic unguis, being much longer than the base and narrowly tapering distally (fig. 2). Perhaps the most conspicuous character of *quercicola*, of greater value than specific, is that of the heavy armature with very prominent long, thick, black or concolorous spines, situated on conspicuous tubercles, which are grouped in clusters, forming longitudinal rows over the entire dorsum of the body of apterous viviparous, apterous oviparous females and nymphs. The alate forms are likewise armed, but with much shorter and less prominent spines. This spiny armature led Dr. Oestlund to name his species *spinus*. A number of *Chaitophorus* species are provided with long curved hairs and bristles over the antennae and the entire body; these hairs or bristles, however, are not the type of heavy spines as in the case of *quercicola*. Two other differences can be noted: first, that the antennae are only sparingly armed with short bristles instead of numerous long hairs and curved bristles so characteristic of *Chaitophorus*, and second, that there are broad fuscous bands bordering the wing veins.

In consideration of the above listed, obviously generic, differences between *quercicola* and the typical *Chaitophorus* species, a more suitable generic position for this species was searched for among the known genera of *Chaitophorini* and *Callipterini*, but without avail. The nearest approach is the genus *Eichochaitophorus* erected by Essig (5) in 1912 for his new species *Eichochaitophorus populifolii*. His species, however,

is typical *Chaitophorus* as shown by Baker (2) in 1920, at which time *Eichochoitophorus* was sunk as a synonym of *Chaitophorus*.

The writer had the opportunity of examining several cotype slides of Essig's species of both alate and apterous viviparous females. In addition to this material he also has in his possession a few slides of apparently the same species taken by Prof. H. F. Wilson in Oregon. A careful examination of *E. populifolii* Essig and his excellent original description and illustrations of the species proves that it agrees in all respects with typical species of *Chaitophorus* as to generic characters discussed above, and it must be considered under the latter genus. This leaves *quercicola* without a generic designation, therefore a new genus, *Hoplochoitophorus*, hereby is proposed for the species.

HOPLOCHAITOPHORUS, new genus.

Body stout, somewhat elongated. Antennae of six segments, shorter than the body, sparingly armed with a few short bristles and with circular secondary sensoria in alate and none in apterous viviparous or in oviparous females. Primary sensorium at the base of the unguis small, subcircular; the unguis relatively short, thick, about the length of the base. Frons without prominent antennal tubercles. Cornicles truncate, broader at the base, somewhat constricted in the middle just below the flange, and without reticulations or imbrications. Cauda broadly knobbed, with a short thick neck. Anal plate distinctly and broadly bilobed. Both cauda and anal plate provided with stout, long bristle-like hairs. Head, thorax and abdomen of apterous viviparous and oviparous forms armed with prominent, long, thick spines over tuberculate dorsum. Alate forms likewise armed with much shorter and less conspicuous spine-like hairs. Wing venation normal, with broad fuscous bands bordering veins. Fore wings with media twice branched; radial sector short, moderately curved; hind wings with media and cubitus present, somewhat bordered with fuscous bands. Oviparous females with drawn out ovipositor. Eggs deposited in crevices of the bark of the tree. Males wingless. Forms are robust, living in thick colonies along the veins on upper surface of foliage. Alatae not common.

Genotype, *Chaitophorus quercicola* (Monell).

This genus can be readily separated from other genera of *Chaitophorini* and *Callipterini* by the prominent armature of apterous forms, the type of cauda and anal plate, as well as the type of antennae and cornicles of both alate and apterous forms.

The genus *Hoplochoitophorus* phylogenetically is probably more closely related to the genus *Neosymydobius* than to *Chaitophorus*, where the genotype was customarily included. The relationship between *Neosymydobius* and *Hoplochoitophorus* is not only seen in food habits and the host on which they feed (oak), but in a number of morphological characters, such as general resemblance of antennae, with their sparse armature, drawn out ovipositors in oviparous forms, cornicles without reticulations and even in anal plate, which in *Neosymydobius*

is only slightly indented and in *Hoplochaitophorus* it is broadly bilobed. It differs from *Neosymydobius* in the type of cauda, which in the later genus is more rounded or indistinctly constricted, while in *Hoplochaitophorus* it is distinctly knobbed.

In anal plate and cauda as well as the type of wing venation it approaches *Myzocallis*, but it is clear that it is distinct on account of profound differences in structure and general type of the insect.

There is hardly any relationship between *Hoplochaitophorus* and *Chaitophorus* as it is pointed out above, with the exception of knobbed cauda, hairiness of antennae and pilose or bristly covering of the body, which in *Hoplochaitophorus* is prominently spiny. It differs from *Chaitophorus* in having the anal plate distinctly and broadly bilobed; cornicles without sculpturings; and in the type of unguis.

From *Patchia* it differs by deeply divided anal plate, the clavate cauda, and almost glabrous antennae as compared with profuse hairiness of antennae found in *Patchia*. Both genera agree in having wing veins bordered with smoky bands. This character, however, may or may not be of generic value. In *Patchia* the radial sector is absent—in *Hoplochaitophorus* it is present.

The genus *Hoplochaitophorus* doubtless represents a phylogenetic link between the genera belonging to the tribes *Chaitophorini* and *Callipterini*. To the former it is related by the general type of the insect, the armature of the body and antennae, but it also approaches the latter by the structure of antennae, wing venation, cornicles, cauda and anal plate.

Since 1923 a species of aphid, inhabiting young twigs and petioles of *Quercus borealis* and *Quercus velutina*, has periodically been collected at different times of the growing season in northern Wisconsin. In many respects it approaches to *Neosymydobius* and *Patchia*, and yet it possesses a series of individual characters that separates it from the above named genera. It is Lachnus-like in general appearance, especially of apterous forms with their long hind tibiae, and upon close examination it shows some structures that are typical of *Lachnus*, *Chaitophorus* and *Callipterus* groups of aphids. It can not be safely placed in any of the known genera, and phylogenetically, to all appearances, it constitutes a link between *Patchia* and *Neosymydobius*, doubtless deserving a new generic designation. For this reason a new genus, *Lachnochaitophorus*, is here proposed.

LACHNOCHAITOPHORUS, new genus.

Body globular, short and robust, liberally covered with stiff hairs. Antennae of six segments, shorter than the body, Lachnus-like in appearance, well armed with rather long, thick, bristle-like hairs, and large circular secondary sensoria

in alate and none in apterous viviparous or in oviparous females. Primary sensorium at the base of the unguis large and circular with a few small circular auxiliary sensoria; the unguis very short and thick, Lachnus-like in appearance. Frons without antennal tubercles. Cornicles truncate, very short, not as long as wide, without flange. Cauda broadly rounded, semicircular, not knobbed. Anal plate conspicuously, but not deeply indented. Anal plate and cauda profusely armed with long bristle-like hairs. Wing venation normal, with broad fuscous bands bordering rather heavy veins of both pairs of wings. Fore wing with media twice branched; radial sector present or well indicated, sharply curved upward, and broadly margined with smoky bands. Hind wings with media and cubitus present. Oviparous females with long drawn out ovipositors. Males wingless. Forms are living in small compactly crowded colonies on young bark, petioles of leaves, and occasionally along the basal part of mid-rib on lower side of the foliage. Well attended by ants.

Genotype, *Lachnochaitophorus querecus*, new species.

This genus is closely related to *Patchia* by the structure of cauda and anal plate, cornicles, as well as the bordering of the wing veins with broad smoky bands. It differs from *Patchia* by having a well developed radial sector, more rounded, semi-circular cauda, the less pilose antennae, the type of the unguis and the absence of secondary sensoria in apterous forms, while *Patchia* is in part characterized by having such sensoria. (Figs. 3, 4, 5, 12, 13, 14, and 15.)

Lachnochaitophorus approaches to *Neosymydobius* by the indented anal plate, cornicles and drawn out ovipositor in oviparous females. It differs from that genus by the type of antennae and unguis, greater pilosity of the body and antennae, by rounded cauda, without any evidence of constriction or tendency to a knobbed shape of cauda as is the case with *Neosymydobius* species.

To *Hoplochaitophorus* it is related by fuscous banding of the veins, indented anal plate and hairy armature of body and antennae. It differs from it by the cornicles, semicircular cauda, armature and the type of antennae. (Figs. 1, 4, 5, 6, 7, 8, 14, and 15.)

To *Chaitophorus* it is related by the general appearance of the insect, hirsute covering of the body and antennae with curved bristle-like hairs. It differs by the indented anal plate, rounded cauda and the type of cornicles. (Figs. 2, 4, 5, 9, 10, 11, 14, and 15.)

The genus *Lachnochaitophorus* strikingly merges the *Chaitophorea* type of the body of the insect and cauda with the *Lachnea* type of antennae and hind tibiae, as well as the *Calliptera* type of wings, cornicles and anal plate.

Lachnochaitophorus querecus, new species.

Alate viviparous female. (Plate 2, figures 4, 14, and 15.)

Average length of body from vertex to the tip of anal plate, 1.751 mm. General color of living specimens to naked eye is black with very dark brown undertone. Freshly mounted in balsam they appear dark brown with olive green background. Head convex, dark brown, distinctly infuscated, with prominent median ocellus and long, curved hairs. Ocelli bordered with black. Eyes carmine, with distinct ocular tubercles. Antennae of six segments without antennal tubercles or placed on very shallow, hardly discernible elevations. Length of antennae 0.955 mm. Comparative average lengths of antennal segments as follows: I-4; II-4; III-15.3; IV-11.7; V-10.6; VI-6.25 plus unguis 2.8. The unguis, Lachnus-like, less than half the length of its base. Antennae dusky brown, with darker annulations distally and provided with hairy vestiture. Antennal hairs often curved and about twice as long as the width of antennae. Antennal segments I and II very dark brown with blackish tinge; segments III and IV greenish light brown with black annulations; segments V and VI including unguis, from brown to dark brown or almost black. Antennae, beginning with distal half of segment III to the tip of the unguis, rather roughly imbricated. The entire length of segment III carries in a row from 4 to 8 rather large circular secondary sensoria, often irregular in size, extreme numbers are rare, and only 5 to 6 sensoria more common. In about fifty per cent of alate specimens antennal segment IV also carries from 1 to 2 somewhat smaller circular sensoria. The end of segment V with primary circular sensorium without the fringe of sensilia, and the usual primary circular sensorium at the base of the unguis with a few small auxiliary circular sensoria and a small fringe of crown-like sensilia. Rostrum dusky, about reaching to the hind coxae.

Prothorax dark brown, infuscated, narrow anteriorly and much wider caudad. Posterior margins of prothorax with lateral small, finger-like, black tubercles, often obscured by meso-thorax. Thoracic lobes black; meso- and meta-thorax very dark brown to black; intersegmental thoracic areas light brown. The entire thorax liberally armed with small curved hairs. Fore femora dusky brown with yellowish tinge, meso- and meta-femora almost black. Fore and meso-tibiae very fuscous to black with distal halves greenish yellow, slightly fumose; meta-tibiae conspicuously long, entirely black and somewhat inwardly curved. Tarsi and claws dusky brown; empodium present. Legs beset with prominent dark hairs. Wings narrow and slender; veins rather heavy and broadly margined with fuscous bands; interveinal areas of wings thickly sculptured with scale-like infumations. Fore wings with media bifurcated; the base of media not reaching the subcostal vein; stigma short, very dark smoky brown without clear cell; radial sector present, sharply curved upward, either complete or slightly fading toward stigma. Hind wings with media and cubitus present, distinctly bordered with dusky brown bands; hooklets from three to five.

Abdomen dark brown with olive green tinge, often almost black due to eight rather wide abdominal dusky or black dorsal bands, which extend to the sides of the abdomen. These bands are somewhat constricted along the median line of the dorsum and again interrupted laterally, forming lateral black patches on the sides of the abdomen which may appear independent of the dorsal bands.

Abdomen rather short and globular, without lateral tubercles, but with numerous curved hairs. Cornicles truncate, very short, not as long as wide, without flange or ornamentation, the average length of cornicles about 0.021 mm., dusky brown with olive green undertone. Cauda broadly rounded, semi-circular, not knobbed and without evidence of constriction. Anal plate conspicuously, but not deeply, indented. Anal plate and cauda dark dusky brown and profusely armed with long bristle-like curved hairs.

Described from 33 specimens collected at Egg Harbor, Wisconsin.

Apterous viviparous female. (Plate 2, fig. 5.)

Average length of body from vertex to the tip of anal plate, 1.869 mm. General color of living specimens black, almost shiny black. Freshly mounted in balsam appear very dark brown with dusky-black shadings. Head and thoracic segments dark brown with smoky-black cast and olive green inter-segmental areas. Prothoracic lateral tubercles present. Eyes carmine with distinct ocular tubercles. Antennae of six segments, dusky dark brown, each segment somewhat lighter at the base and considerably darker distally, segments V and VI together with unguis black. Length of antenna 0.907 mm. Comparative average lengths of antennal segments as follows: I-4; II-4; III-14.5; IV-10.45; V-10.1; VI-6.35 plus unguis 2.4. Antennae without secondary sensoria, but with usual circular primary sensoria on segments V and IV. Antennal vestiture and imbrications as in alate viviparous females. Vertex convex; head, thoracic segments and abdomen thickly set with curved hairs.

Rostrum dusky brown reaching beyond the second coxae. Legs very dark brown to black, with distal ends of pro- and meso-tibiae lighter brown; hind tibiae long, rather conspicuous, somewhat inwardly curved, and almost jet black. Tarsi dusky brown. Dorsum of abdomen highly elevated, globular, dark brown with smoky-black cast over the entire dorsum, resulting from the fusion of dorsal bands. There is a separate broad dusky-black band over the penultimate abdominal segment. The entire abdomen often appears black. Cornicles truncate, dusky brown without flange, much shorter than the width at the base. Structure of cauda and anal plate as in alate viviparous females, dusky brown in color.

Described from 42 specimens collected at Egg Harbor, Wisconsin.

Apterous oviparous female.

Length of body from vertex to the tip of anal plate, including drawn out ovipositor, about 2.587 mm., some are over 3.0 mm. long. Dorsum of abdomen hirsute, highly arched, globular as in apterous viviparous females. General color very dark brown to black, almost shiny black. Freshly mounted in balsam show broad black transverse abdominal bands with somewhat irregular, narrow, brownish in color intersegmental areas. Head dusky dark brown. Eyes dark red. Prothorax and meso-thorax reddish brown. Meta-thorax dusky dark brown. Ovipositor long, reddish brown with greenish tinge. Color

and structure of antennae as in apterous viviparous females. Length of antenna 0.835 mm. Comparative average length of antennal segments as follows: I-4; II-3.2; III-13.25; IV-9.6; V-9.1; VI-6.0, plus unguis 2.55; without secondary sensoria. Hind legs are long and black, except tarsi, which are pale brown. Hind tibia about 1.05 mm. long, slightly swollen, inwardly curved, armed with bristly hairs and carries on the inner margin a few scattered groups of elevated, circular sensoria. Fore femora light brown; fore tibiae dusky brown with distal ends paler in color. Second pair of legs similar to fore pair with the exception of femora, which are almost black. Tarsi pale brown with black claws. Rostrum reaching beyond the third pair of coxae. Cornicles truncate, dusky to black. Cauda rounded, anal plate slightly indented, sometimes appears to be rounded. Both cauda and anal plate dusky and hairy.

Eggs freshly laid are olive green in color, later turning black. Described from 29 specimens taken in Wisconsin.

Apterous male.

Males are small. Length of body from vertex to the tip of anal plate about 1.126 mm. General color dark brown to reddish black or black with greenish undertone. Eyes red. Entire body, legs and antennae hirsute. Legs black with the exception of pro- and meso-tibial distal ends, which are light brown. Rostrum reaching far beyond the third pair of coxae. Antennae with bristle-like hairs, dusky brown, distally black. Length of antennae 0.8803 mm. Comparative average lengths of antennal segments as follows: I-4; II-3.8; III-13.0; IV-10.0; V-9.6; VI-6.9, plus unguis 3.0. Secondary sensoria present on all antennal segments and distributed as follows: III—from 6 to 10, usually 6 to 7, circular, irregular in size in a somewhat uneven row over the entire segment, scattered basally; IV—from 4 to 7, usually 4 to 5, circular, very irregular in size, from very small to quite large, often coalescent, placed as a rule more toward the distal end of the segment in irregular row; V—from 4 to 5, placed as in IV; VI—with 1 to 3 usually 2, circular sensoria varied in size. The primary sensorium at the base of the unguis with 4 to 6 auxiliary circular sensoria usually placed toward the unguis. The very tip of the unguis always with rod-like sensilia and often with one or two sensoria-like structures. Abdomen reddish brown to black due to dusky transverse dorsal coalescent bands. Cornicles small, truncate, not as long as wide, dusky to black. Cauda rounded, dusky and hairy; anal plate very slightly immarginate, dusky brown, with long hairs. Claspers dark brown to black, thickly beset with fine hairs. Genital organ greenish yellow, about 0.315 mm. long, and 0.070 mm. in diameter.

Described from 7 specimens collected in Egg Harbor, Wisconsin.

Nymphs and pupae.

Variable in color. Body hairy. Head and thorax reddish brown with dusky shading. Eyes red. Abdomen of various shades of brown or reddish brown to almost black with greenish tinge and always with several clear, slit-like areas

of green on each lateral side. Transverse dusky, dorsal bands present. Cornicles dusky. Legs as in apterous viviparous females. Wing pads dusky brown.

HOST PLANT AND FEEDING HABITS.

This interesting species was repeatedly collected on two different oak trees, black oak, *Quercus velutina* Lam.; and red oak, *Q. borealis* Mischx. It feeds in small colonies primarily on petioles of the leaves and young bark of succulent, one year old shoots. Sometimes small colonies may be found feeding on the basal part of the midrib on the lower and more rarely on the upper side of the foliage. This species is very tenaciously attended by small black ants, *Crematogaster lineolata* var. near *cerasi* Fitch, which was kindly determined by Prof. M. R. Smith. Each colony of aphids is attended by several of these ants, often as many as aphids, and upon the least disturbance, both the aphids and ants raise their abdomens upward, which appear identical due to the structure and black color of aphids. Upon further disturbance the ants carry the aphids away. In many cases the ants constructed conical roofs, consisting of bits of oak epidermis and mud, over the upper part of leaf petioles, just at the base of the leaf blades. In rainy weather drops of rain water run off of these roof structures, keeping the aphids entirely dry.

Type locality.—Egg Harbor, Wisconsin.

Cotypes and paratypes in the U. S. National Museum and in the collections of the Division of Entomology of the University of Minnesota, Dr. C. P. Gillette and the writer. The following material was used for description of species, all collected at Egg Harbor, Wisconsin, by the writer:

July 24, 1923. Three slides, apterous and alate viviparous females.

September 18, 1923. Three slides, apterous viviparous females and nymphs.

July 24, 1925. Six slides, apterous and alate viviparous females.

September 15, 1926. Three slides, apterous and alate viviparous females, oviparous females and one male.

July 31, 1927. Eleven slides, apterous and alate viviparous females.

August 28, 1927. Two slides, apterous and alate viviparous females.

September 16, 1927. Nine slides, apterous oviparous females, males and nymphs.

A number of specimens of a closely related species were received in alcohol vials from Mr. Theo. L. Bissell, collected by him on various dates in Thomasville, Georgia. This mater-

ial, in so far as coloration is concerned, is almost identical to the above described *Lachnochaitophorus querceus*. Both alate and apterous viviparous females exhibit, however, a considerable departure from the above species in the relative lengths of antennal segments, and the number of secondary sensoria on the antennae of alate forms. The antennal segment III is much longer and carries more sensoria than in the preceding species. Size of the body is somewhat smaller with slight differences in coloration. In view of the fact that these differences, especially the number of sensoria and the relative lengths of antennal segments, are constant in a long series of specimens, it seems it should be justifiable to consider it as a distinct species. It is hoped that biological studies will point out still further differences. In accordance with the above mentioned facts it is named in the honor of Mr. Theo. L. Bissell, who kindly supplied this material.

***Lachnochaitophorus bisselli*, new species.**

Alate viviparous female.

Average length of body from vertex to the tip of anal plate 1.672 mm. General color burnt sienna with heavier chitinized parts dark, giving the whole body the appearance of dark brown. Abdomen with a greenish cast. Head burnt sienna, sides above the eyes and around the bases of the antennae dark brown. Eyes carmine. Antennae of six segments, much as in the preceding species as to color and structure, but usually much darker and with longer, considerably curved hairs. Length of antennae 0.990 mm. Comparative average lengths of antennal segments as follows: I-4; II-4; III-17.7; IV-11.25; V-10.85; VI-6.1 plus unguis 2.65. The entire length of segment III armed with a row of secondary circular, quite regular in size, sensoria from 6 to 11 in number, usually 8 and 9. The secondary sensoria is almost twice the number per segment as compared with the preceding species. Segment IV with 1 to 3 secondary sensoria in above fifty per cent of the specimens. Rostrum not quite reaching the middle pair of coxae.

Thoracic segments, structure and coloration of legs and wings as in preceding species.

Abdomen burnt sienna with greenish to orange tinge. Abdominal dusky transverse bands either absent or very indistinct; the lateral dusky patches are present and are conspicuous. Cornicles truncate, dusky to black. Cauda broadly rounded; anal plate distinctly, but not deeply immarginated. Both cauda and anal plate dusky brown, and conspicuously armed with long bristle-like hairs.

Described from 56 specimens collected by Theo. L. Bissell at Thomasville, Georgia.

Apterous viviparous female.

Average length of body from vertex to the tip of anal plate 1.643 mm. General color is very dark brown to black. Head and thoracic segments as in the alate

viviparous females. Eyes red. Antennae of six segments, imbricated, hairy, almost uniformly dusky brown, distally black. Length of antenna 0.886 mm. Comparative average lengths of antennal segments as follows: I-4; II-4; III-15.687; IV-9.25; V-9.187; VI-5.875 plus unguis 2.625. Antennae without secondary sensoria. Rostrum about reaching the second coxae.

Thoracic segments as in preceding species. Legs almost black with brownish tinge, pro- and meso-tibiae slightly lighter distally.

Dorsum of the abdomen markedly elevated, without transverse bands, but almost uniformly coated with dusky cast. Cornicles truncate, dusky brown, shorter than wide. Structure and coloration of cauda and anal plate as in alate viviparous females.

Described from 15 specimens collected by Theo. L. Bissell at Thomasville, Georgia.

Host plants and feeding habits.—It inhabits the small twigs and leaf petioles of water oak, *Quercus nigra*, and is always found in association with ants, *Crematogaster lineolata* (Say).

Type locality.—Thomasville, Georgia.

Cotypes and paratypes in the U. S. National Museum, and in the collections of Mr. Theo. L. Bissell, the Division of Entomology of the University of Minnesota, and that of the writer. The following material was used for description of species, all of which was collected at Thomasville, Georgia by Mr. Bissell:

Summer of 1926, one alate viviparous female, one slide.

February 15, 1927, only alate viviparous females, six slides.

March 4, 1927, one alate viviparous female, one slide.

April 18, 1927, apterous and alate viviparous females, six slides.

May 2, 1927, apterous and alate viviparous females, nine slides.

This species can be separated from *Lachnochaitophorus querceus* primarily by the number of secondary sensoria, which are, as a rule, more or less uniform in size and run from 6 to 11, usually 8 to 9 to the segment. They are placed on somewhat longer segments than is the case with *L. querceus*, which usually has only from 4 to 6 sensoria, placed on much shorter and thicker segments. Rostrum of *L. bisselli* is much shorter, abdominal dorsal bands inconspicuous or absent, lateral dusky patches are more prominent, body smaller and general coloration is somewhat darker. The antennae are provided with somewhat longer and more curved hairs.

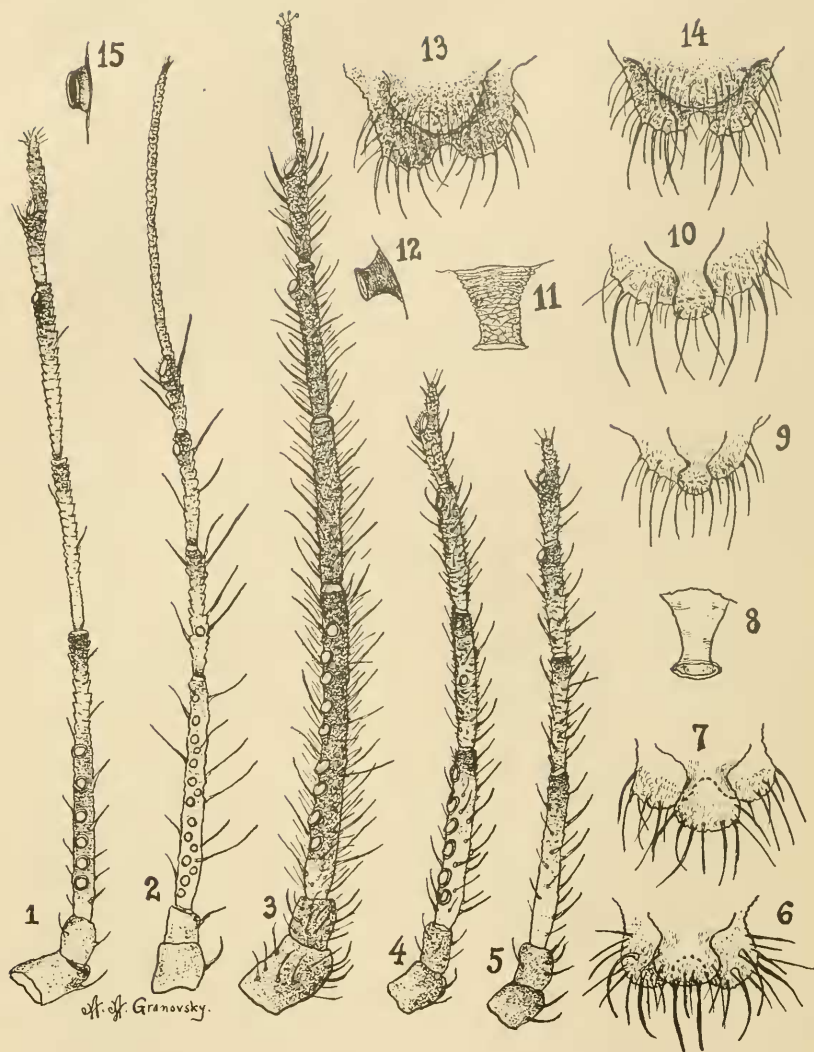
The difference in number of sensoria may be best illustrated by the following table:

Name of species	Antenna having following number of sensoria									Total number of antennae
	4	5	6	7	8	9	10	11	12	
<i>Lachnochaitophorus querceus</i>	7	30	26	14	2	0	0	0	0	79
<i>Lachnochaitophorus bisselli</i>	0	0	5	12	39	26	9	2	0	93

Acknowledgments are due to Dr. C. P. Gillette and Professor M. A. Palmer for their opinion as to generic value of *Lachnochaitophorus querceus*. To Professor M. R. Frison for determination of ants and to Mr. Theo. L. Bissell for the supply of undescribed aphid material and the permission for the free use of it. To Dr. Theo. Frison for the loan of the type slide of Thomas' *Callipterus quercifolii* and to Dr. O. W. Oestlund for the loan of his *Ch. spinosus*.

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EXPLANATION OF PLATE.

Hoplochaitophorus quercicola (Monell).

Alate viviparous female:

1, antenna; 6, cauda and anal plate; 8, cornicle.

Apterous viviparous female:

7, cauda and anal plate.

Chaitophorus populifoliae Oestlund.

Alate viviparous female:

2, antenna; 9, cauda and anal plate; 11, cornicle.

Apterous viviparous female:

10, cauda and anal plate.

Patchia virginiana Baker.

Alate viviparous female:

3, antenna; 12, cornicle; 13, cauda and anal plate.

Lachnochaitophorus querceus, n. sp.

Alate viviparous female:

4, antennae; 14, cauda and anal plate; 15, cornicle.

Apterous viviparous female:

5, antenna.

All drawings are made to the same scale and therefore are comparable.

CORRECTION.

In the January number of the Proceedings, in the last paragraph on page 11, the generic name "Cysticercus" should read "Cryptocercus." the name having been inadvertently changed in copying.

J. C. BRIDWELL.

MINUTES OF THE 444TH REGULAR MEETING OF THE ENTOMOLOGICAL SOCIETY OF WASHINGTON, FEBRUARY 2, 1933.

The 444th regular meeting of the Entomological Society of Washington was held at 8 p. m., Thursday, February 2, 1933, in Room 43 of the new building of the National Museum. Mr. C. T. Greene, president, presided. There were present 47 members and 30 visitors. The minutes of the previous meeting were read and approved.

The president reported visiting Doctor Howard, as instructed at last meeting, and of receiving a greeting from him to the Society.

The president mentioned the coming centennial of the London Entomological